

In the Claims:

I claim:

Claim 1 (Canceled).

Claim 2 (Currently amended). A plant containing one or more of the following novel restriction fragments identified by one or more molecular marker-enzyme combinations [[in claim 1]] thereof[,]]; BNL5.62, EcoRI, 10.3 kb; npi97, HindIII, 3.9 kb; UMC157, EcoRI, 6.5 kb and 3.3 kb; UMC157, HindIII, 5.5 kb; UMC157, BamHI, 14.0 kb, 8.5 kb and 4.5 kb; UMC11, BamHI, 7.0 kb; CSU3, BamHI, 10.0 kb and 7.6 kb; UMC67, EcoRI, 19.2 kb; UMC67, BamHI 13.4 kb, 11.0 kb and 1.6 kb; CSU92, BamHI, 13.3 kb and 7.5 kb; asg62, BamHI, 12.7 kb, 9.7 kb and 6.6 kb; UMC58, HindIII, 3.3 kb; CSU164, EcoRI, 9.0 kb and 7.0 kb; UMC128, HindIII, 6.0 kb; UMC107, EcoRI, 7.5.0 kb, 6.3 kb and 6.1 kb; UMC140, EcoRI, 4.9 kb; UMC140, HindIII, 6.5 kb; adh1, HindIII, 9.4 kb; adh1, BamHI, 9.4 kb; UMC161, HindIII, 3.3 kb; BNL8.29, HindIII, 9.3 kb and 8.3 kb; UMC53, EcoRI, 9.4 kb; UMC53, EcoRV, 8.4 kb, 3.8 kb and 3.0 kb; UMC6, EcoRI, 3.8 kb; UMC6, HindIII 9.4 kb; UMC6, BamHI, 13.2 kb, 12.7 kb, and 7.0 kb; UMC61, HindIII, 3.4 and 2.8 kb; agrr167, BamHI, 5.7 kb, 4.5 kb and 4.0 kb; UMC34, EcoRI, 7.5 kb and 5.4 kb; UMC34, HindIII, 8.8 kb, 6.5 kb and 5.8 kb; UMC34, BamHI, 9.4 kb; UMC135, HindIII, 11.6 kb and 10.8 kb; UMC131, EcoRI, 10.6 kb, 5.8 kb and 4.3 kb; UMC55, EcoRI, 3.9 kb; UMC55, HindIII, 4.3 kb; UMC5, EcoRI, 5.4 kb; UMC5, HindIII, 6.5 kb; UMC49, BamHI, 8.2 kb; UMC36, BamHI, 4.2 kb; UMC32, EcoRI, 5.3 kb; UMC32, HindIII 6.7 kb, 6.0 kb, and 2.8 kb; asg24, HindIII, 7.2 kb and 6.4 kb; UMC121, EcoRI, 3.7 kb and 3.2 kb; BNL8.35, HindIII, 9.9 kb and 8.7 kb; UMC50, BamHI, 7.8 kb, 6.8 kb, 5.8 kb and 3.8 kb; UMC42, HindIII, 10.4 kb, 9.2 kb, 8.9 kb, 7.9 kb, 7.6 kb, and 3.7 kb; npi247, EcoRI, 8.0 kb; npi247, HindIII 3.0 kb; UMC10, HindIII,

3.0 kb; UMC10, EcoRI, 6.5 kb and 5.5 kb; UMC102, EcoRI, 2.7 kb;
BNL6.06, EcoRI, 6.8 kb; CSU240, EcoRI, 10.6 kb, 4.5 kb and 3.3 kb;
BNL5.37, HindIII, 10.3 kb, 5.8 kb and 3.5 kb; npi296, EcoRI, 7.9
kb; UMC3, EcoRI 2.5 kb and 2.0 kb; npi212, HindIII, 4.3 kb; npi212,
BamHI, 5.4 kb; UMC39, EcoRI, 12.2 kb, 9.2 kb, 7.8 kb and 7.1 kb;
phi10080, BamHI, 9.7 kb; UMC63, HindIII, 9.5 kb and 4.3 kb; CSU303,
EcoRI, 10.0 kb; UMC96, HindIII, 11.8 kb, 6.4 kb and 5.5 kb; UMC96,
BamHI, 7.5 kb; UMC2, EcoRI, 11.8 kb, 10.4 kb, 8.0 kb and 3.9 kb;
CSU25, HindIII, 5.2 kb, 4.5 and 4.2 kb; agrr115, EcoRI. 8.0 kb and
5.4 kb; agrr115, BamHI, 5.4 kb and 3.5 kb; phi20725, EcoRI, 10.3
kb, 9.7 kb and 7.2 kb; phi20725, HindIII, 1.5 kb; UMC31, EcoRI, 5.8
kb and 2.0 kb; UMC31, BamHI 6.5 kb; UMC55, EcoRI, 3.9 kb; UMC55,
HindIII, 4.3 kb; CSU235, HindIII, 6.8 kb and 3.0 kb; CSU585,
HindIII, 8.3 kb and 6.1 kb; BNL5.46, HindIII, 13.7 kb, 10.5 kb, 9.7
kb and 5.1 kb; agrr321, BamHI, 5.5 kb; agrr89, HindIII, 7.1 kb;
npi386, HindIII, 12.6 kb, 9.3 kb and 8.2 kb; UMC42, HindIII, 19.2
kb, 10.3 kb 8.9 kb, 7.6 kb, 3.7 kb and 3.0 kb; tda62, BamHI, 5.5
kb, 5.2 kb, 4.8 kb and 4.2 kb; BNL5.71, EcoRV, 11.3 kb, 6.8 kb, and
5.7 kb; UMC156, HindIII, 3.0 kb; UMC66, EcoRI, 10.5 kb; UMC66,
BamHI, 3.7 kb and 2.4 kb; UMC19, BamHI, 12.3 kb; UMC104, HindIII,
12.4 kb, 11.6 kb and 7.5 kb; UMC104, BamHI, 9.4 kb; UMC133,
HindIII, 10.6 kb, 9.9 kb, 9.2 kb and 7.7 kb; UMC52, BamHI, 8.7 kb,
6.9 kb, 3.8 kb, 3.0 kb and 2.0 kb; BNL15.07, HindIII, 2.9 kb and
2.7 kb; npi409, EcoRI, 9.4 kb; npi409, HindIII, 10.4 kb, 9.0 kb and
3.9 kb; UMC147, HindIII, 16.3 kb, 3.8 kb and 2.4 kb; asg73, EcoRI,
3.8 kb; UMC90, HindIII, 7.7 kb, 6.5 kb, 2.8 kb and 1.6 kb; UMC90,
BamHI, 9.0 kb; UMC72, 8.5 kb; UMC27, HindIII, 8.3 kb and 4.5 kb;
UMC27, BamHI, 6.5 kb; UMC43, BamHI, 9.7 kb, 7.3 kb and 5.7 kb;
tda37, BamHI, 9.0 kb, 8.0 kb and 6.4 kb; UMC43, BamHI, 9.7 kb, 7.3
kb and 5.7 kb; UMC40, BamHI, 7.2 kb, 4.7 kb and 4.3 kb; BNL7.71,
HindIII, 10.6 kb; BNL5.71, BamHI, 11.3 kb, 6.8 kb and 5.7 kb;
tda62, BamHI, 6.5 kb and 5.5 kb; UMC68, HindIII, 6.0 kb; UMC104,

HindIII, 12.4 kb, 11.6 kb and 7.5 kb; UMC104, BamHI, 9.4 kb; phi10017, BamHI, 15.1 kb and 9.5 kb; tda50, BamHI, 8.5 kb; npi373, HindIII, 6.5 kb, 5.6 kb, 5.1 kb and 3.0 kb; tda204, BamHI, 4.0 kb; npi393, EcoRI, 12.1 kb, 8.5 kb, 7.0 kb and 5.6 kb; UMC65, HindIII, 2.9 kb; UMC46, EcoRI, 6.5 kb and 5.6 kb; asg7, HindIII, 6.3 kb; UMC28, HindIII, 15.8 kb and 11.9 kb; UMC28, BamHI, 9.9 kb, 7.6 kb and 6.6 kb; UMC134, HindIII, 7.5 kb and 4.7 kb; asg8, HindIII, 10.8 kb, 8.7 kb and 8.4 kb; phi20581, HindIII, 4.2 kb; O2, EcoRI, 9.4 kb; asg34, HindIII, 4.5 kb; BNL15.40, HindIII, 5.8 kb; UMC116, EcoRI, 9.5 kb; UMC110, BamHI, 10.6 kb, 4.9 kb and 3.9 kb; BNL8.32, HindIII, 8.9 kb, 7.4 kb and 7.1 kb; BNL14.07, EcoRI, 6.4 kb; UMC80, HindIII, 10.7 kb, 8.2 kb and 2.4 kb; BNL16.06, EcoRI, 6.8 kb and 1.9 kb; BNL16.06, HindIII, 5.7 kb, 3.0 kb and 1.6 kb; phi20020, HindIII, 7.8 kb, 6.6 kb and 5.1 kb; npi114, HindIII, 10.0 kb, 8.8 kb and 6.3 kb; BNL9.11, HindIII, 3.4 kb; UMC103, HindIII, 6.9 kb; UMC124, HindIII, 8.0 and 7.0; UMC124, BamHI, 6.6 kb, 2.6 kb and 1.6 kb; UMC120, HindIII, 3.2 kb, 2.3 kb and 1.4 kb; UMC89, EcoRI, 7.3 kb; UMC89, HindIII, 7.3 kb; UMC89, BamHI, 9.5 kb, 6.0 kb, 5.2 kb and 4.5 kb; UMC89, MspI, 6.7 kb and 5.8 kb; BNL12.30, EcoRI, 3.5 kb; UMC48, HindIII, 6.2 kb, 5.3 kb, 4.7 kb, 4.2 kb and 3.5 kb; UMC53, EcoRI, 3.8 kb and 3.0 kb; UMC53, EcoRV, 8.4 kb; npi268, BamHI, 6.4 kb; UMC7, BamHI, 4.2 kb; UMC3, EcoRI, 3.5 kb and 2.0 kb; phi10005, EcoRI, 15.0 kb and 1.6 kb; UMC113, EcoRI, 5.9 kb and 5.4 kb; UMC113, BamHI, 12.8 kb, 11.8 kb and 10.5 kb; UMC192, HindIII, 11.4 kb and 6.4 kb; wx (waxy), HindIII, 21.0 kb; UMC105, EcoRI, 3.9 kb; CSU147, HindIII 5.9 kb; BNL5.10, HindIII, 6.1 kb and 4.4 kb; UMC114, BamHI, 12.6 kb, 11.5 kb, 10.0 kb, 8.8 kb, 7.5 kb and 6.5 kb; UMC95, EcoRI, 5.6 kb; UMC95, HindIII, 7.7 kb, 7.3 kb, 4.8 kb, 4.5 kb 4.1 kb and 1.7 kb; UMC95, BamHI, 15.0 kb and 9.0 kb; asg44, EcoRI, 5.3 kb; CSU61, EcoRI, 8.1 kb and 4.8 kb; BNL7.57, BamHI, 11.6 kb and 5.9 kb; CSU54, EcoRI, 14.7 kb and 12.6 kb; phi20075, EcoRI, 7.1 kb; npi285, EcoRI, 12.4 kb, 9.4 kb and 6.0 kb; KSU5,

EcoRI, 9.8 kb, 7.6 kb, 6.1 kb, 3.8 kb and 3.5 kb; UMC130, EcoRI, 13.5 kb and 7.0 kb; UMC130, HindIII, 4.8 kb and 3.2 kb; UMC130, BamHI, 3.2 kb; UMC64, HindIII, 3.3 kb; UMC152, HindIII, 12.4 kb, 7.1 kb and 5.6 kb; phi06005, EcoRI, 12.8 kb; UMC163, HindIII, 7.0 kb, 4.8 kb; 3.0 kb; 2.6 kb and 2.3 kb; UMC44, HindIII, 9.8 kb, 8.7 kb, 7.2 kb, 5.5 kb and 4.0 kb; BNL10.13, HindIII, 10.8 kb; npi306, HindIII, 7.0 kb; pmt1, HindIII, 2.3 kb; pmt2, HindIII, 2.8 kb and 2.1 kb; pmt5, HindIII, 12.3 kb, 8.1 kb, 3.6 kb, 3.2 kb and 2.5 kb; tda48, HindIII, 8.2 kb; tda53, HindIII, 3.8 kb and 2.2 kb; tda168, EcoRI, 3.6 kb; tda16, HindIII, 4.3 kb; and tda17, HindIII, 7.0 kb; tda250, BamHI, 4.0 kb, produced from a procedure comprising the steps of:

- (a) crossing a *Tripsacum* female parent with a teosinte male parent to produce (*Tripsacum* X teosinte) hybrid seed or a teosinte female parent with a *Tripsacum* pollen donor to produce (teosinte X *Tripsacum*) hybrid seed; then
- (b) growing a (*Tripsacum* X teosinte) or (teosinte X *Tripsacum*) hybrid plant from said seed to maturity; then
- (c) harvesting the seed produced in (c).

Claim 3 (Currently amended). Seed from a plant [[in claim 2]] that contains one or more restriction fragments [[produced in accordance with the method described in claim 1]] set forth in claim 2.

Claim 4 (Currently amended). All hybrid plants, derivatives, variants, mutants, modifications, and cellular and molecular components that contain one or more restriction fragments set forth in claim [[1]] 2 thereof, obtained from a plant as set forth in claim [[1]] 2 or grown from seed according to claim 3.

Claim 5 (Currently amended). Pollen produced by a plant according to claims 2 or 4 that contains one or more restriction fragments described in claim [[1]] 2.

Claim 6 (Currently amended). A tissue culture, all derivatives, variants, mutants, modifications, and cellular and molecular components from a plant according to claim 4 that contain one or more restriction fragments described in claim [[1]] 2.

Claim 7 (Canceled).

Claim 8 (Currently amended). A plant wherein said plant is a maize plant that contains one or more restriction fragments described in claim [[1]] 2 thereof, and is produced from a procedure comprising the steps of:

- (a) crossing a *Tripsacum* female parent with a teosinte male parent to produce (*Tripsacum* X teosinte) hybrid seed or a teosinte female parent with a *Tripsacum* pollen donor to produce (teosinte X *Tripsacum*) hybrid seed; then
- (b) growing a (*Tripsacum* X teosinte) or (teosinte X *Tripsacum*) hybrid plant from said seed to maturity; then
- (c) crossing said seed from (*Tripsacum* X teosinte) or (teosinte X *Tripsacum*) hybrid plant with maize to produce seed;
- (d) harvesting the seed produced in (c).

Claim 9 (Currently amended). Maize seed that contains one or more restriction fragments described in claim [[1]] 2 thereof, produced from a plant in claim 8.

Claim 10 (Currently amended). Maize plants, all derivatives, subsequent generations, variants, mutants, modifications, and

Filed July 3, 2003

cellular and molecular components that contain one or more restriction fragments described in claim [[1]] 2 thereof, grown from said seed according to claim 9.

Claim 11 (Currently amended). Pollen that contains one or more restriction fragments described in claim [[1]] 2 thereof, produced by a plant according to claim 8 or claim 10.

Claim 12 (Currently amended). Tissue cultures, all derivatives, variants, mutants, modifications, and cellular and molecular components that contain one or more restriction fragments described in claim [[1]] 2 thereof, derived from said hybrid maize plants according to claim 8 or claim 10.

Claim 13 (New). A plant wherein said plant is a maize plant that contains one or more restriction fragments described in claim 2 thereof, produced from a procedure described in claim 8 or claim 10 that is distinguished by the presence of root aerenchyma.

Claim 14 (New). A plant wherein said plant is a maize plant that contains one or more restriction fragments described in claim 2 thereof, produced from a procedure described in claim 8 or claim 10 that is distinguished by tolerance to corn rootworm.

Claim 15 (New). A plant wherein said plant is a maize plant that contains one or more restriction fragments described in claim 2 thereof, produced from a procedure described in claim 8 or claim 10 that is distinguished by tolerance to drought.

Claim 16 (New). A plant wherein said plant is a maize plant that contains one or more restriction fragments described in claim 2 thereof, produced from a procedure described in claim 8 or claim 10 that is distinguished by improved grain quality.

Claim 17 (New). A plant wherein said plant is a maize plant that contains one or more restriction fragments described in claim 2 thereof, produced from a procedure described in claim 8 or claim 10 that is distinguished by tolerance to acid soils.

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Mary W. Eubanks

(Signature of person mailing correspondence)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
APPLICATION FOR UNITED STATES PATENT

INVENTOR: MARY W. EUBANKS

TITLE: METHOD AND MATERIALS FOR INTROGRESSION OF NOVEL GENETIC
VARIATION IN MAIZE